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ORGANIZATIONAL VS. SUBSYSTEM VS. PSYCHOLOGICAL CLIMATE: WHAT'S --ETC(U)

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A. P. JONES

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Organizational vs. Subsystem vs. Psychological Climate:

What's in a Name? *

Allan P. Jones (Ph.D. - University of Colorado)
is Head of the Fleet Medicine Branch of the Naval
Health Research Center, San Diego, California.

Lawrence R. James (Ph.D. - University of Utah)
is Associate Professor at the Institute of
Behavioral Research, Texas Christian University,
Fort Worth, Texas.

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Organizational vs. Subsystem vs. Psychological Climate:**What's in a Name?****Abstract**

Many recent climate articles have continued in the tradition of theoretical and methodological confusion noted by previous reviewers. In the present article, examples of common problem areas are identified, relevant theoretical and methodological points are discussed, and specific recommendations are offered to overcome some of these problems.

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Organizational vs. Subsystem vs. Psychological Climate:**What's in a Name?**

Few concepts have generated the combined interest, controversy, and confusion that surround organizational climate. Authors have debated whether climate exists as a property of the situation or only in the perceptions of the individual, whether organizations have one or many climates, whether climate must be measured perceptually or objectively, even whether climate represents a legitimate independent concept (11, 19, 21, 38). Not surprisingly, this debate has sparked numerous reviews and recommendations for future research. Following comprehensive synopses of the climate literature, Hellriegel and Slocum (15), James and Jones (19), La Follette and Sims (25), Payne and his associates (33, 35) and others (8, 28, 40) concluded that future efforts must specify whether their focus is on situational factors within the organization or on individual perceptions of those attributes, must select units of analysis (individuals, workgroups, subsystems, organizations) that are appropriate to the research questions at hand, and must distinguish between climate and related concepts such as attitudes, satisfaction, and structure. The most important recommendation, however, subsumed all the above in a call for the development of realistic organizational models that integrate concepts from a number of domains and at all organizational levels.

Unfortunately, these recommendations have sometimes been misinterpreted or have proven difficult to follow. Thus, it appears useful to examine selected, recent articles that appear to represent viable efforts to address

these recommendations, to reconsider some of the major theoretical issues involved, and to explore the basic methodological questions inherent in the almost unanimous use of aggregated perceptual data to study the climate of organizations or subunits. Two articles were selected for examination, not because they provided unique illustrations of pitfalls successfully avoided by most, but rather because the clarity with which conclusions were presented made them informative examples of strengths and weaknesses common to many climate-oriented studies.

In the first of the selected articles, Powell and Butterfield (35) argued that a view of organizations as possessing subsystem climates rendered superfluous the question whether climate is an organizational or an individual attribute. These authors defined subsystem climates as existing "whenever at least one group (subsystem) has different perceptions of the organization's climate than those of employees outside the subsystem" (35, p. 153). Using this definition, Powell and Butterfield argued that the subsystem approach encompassed such diverse units as (a) the organization as a whole, (b) groups formed on any basis, even (c) individual members of the organization. Their rationale for such inclusion was that the organization may be viewed as a subsystem of itself where "each individual comprises a 'finest grain' subsystem of the organization" (p. 155). Pursuant to this logic, Powell and Butterfield argued that subsystem climates should be assessed in terms of significant perceptual differences between units but cautioned that interpretation of results should be appropriate to the subsystem studied.

Similar methodological conclusions were reached by Drexler (8), who postulated that organizational climate existed to the extent that it was

possible to demonstrate greater perceptual differences between organizations than were found across subsystems within an organization. Drexler was interested in climate as a situational concept, more specifically, "an element of organizational environments...that distinguishes among organizations and one that should have organization-specific variance" (8, p. 38). The primary criterion for ascertaining the existence of organizational climate was the demonstration of significantly different perceptions among the members of different organizational units.

Drexler averaged individual climate perceptions across the members of each of 1,356 workgroups in 21 organizations. Using analysis of variance techniques, he found a main organizational effect that accounted for 42% of the variance in these averaged (i.e., workgroup mean) climate scores. Such findings led to the conclusion that: "Climate has more variance attributable to organizations than to organizational subunits, but consideration must be made to the fact that subunit differences do exist" (8, p. 40). Drexler noted that one could conceive of climate at a number of levels of analysis including groups, departments, and total organizations and cautioned that climate measures should contain items that address the appropriate level of analysis.

Both articles represented positive steps toward clarification, especially in their insights into the importance of subsystems and the use of appropriate item referents, as well as their attempts to specify particular organizational units as relevant levels of analysis. Drexler's study (8) was noteworthy also in terms of the magnitude of the accounted-for variance. Unfortunately, both articles fell into serious theoretical and methodological traps. For

example, each defined climate strictly on the basis of unit differences in individual perceptions, inherently mixing individual and situational levels of explanation. Further, this definition failed to consider the fact that similar but formally distinct situations (e.g., different workgroups) may produce parallel perceptions. Finally, this approach to climate ignored the basic ties (and differences) between situational attributes and individual perceptions of those attributes.

In addition to the problems above, each study possessed further areas of concern. For example, Powell and Butterfield (36) so loosely defined "subsystem" that it was no longer possible to use the term to distinguish among levels of analysis (i.e., to differentiate individuals, workgroups, even total organizations). When the looseness of subsystem definition is combined with the emphasis on significant differences in individual perceptions, climate becomes an empirically-tied concept that must be established separately in each new study and for each unit of analysis.

Drexler (8) was more precise in his definition of appropriate units of analysis but ran afoul of the subtle but troublesome problem referred to as the ecological fallacy (12, 13). Simply stated, statistical measures of relationship and power tend to increase with each additional level of aggregation. In other words, aggregation tends to restrict within-group variance more than between-group variance (5). This differential effect can lead to an overestimation of the magnitude of group effects on individual responses. For this reason, Drexler's conclusion that climate is basically not "intra-individual" appeared outside the scope of his findings.

As noted earlier, the problems encountered by these studies are neither unique nor easily resolved. To help avoid perpetuation of such problems, however, it appears useful to review some of the theoretical issues that the climate literature must address, to compare briefly the concepts of situational attribute and perceived attribute, and to explore some of the methodological problems inherent in using perceptually based data to draw inferences about situations.

Theoretical Issues

In one of the few examples of agreement in this literature, recent reviewers have concluded that climate must be investigated within the context of a larger theoretical model of organizational functioning which clarifies the concepts referred to as climate and spells out their relationships with other elements of the organization (6, 11, 15, 19, 35). This model should address relationships at and between each of the different levels of the organization. In other words, a viable model should be able to articulate relationships among subsystem context, structure and climate variables as well as relationships between subsystem attributes and individual performance. Attempts to develop such models (16, 20, 32) have concluded, however, that such relationships are complex, dynamic, and reciprocal. These points are well illustrated in recent studies of leadership which have found that supervisory behavior patterns not only shape the behavior of subordinates but are, in turn, shaped by subordinate responses (4). Such statements further reinforce the realization that attempts to consider only perceived attributes or only situational attributes of the organizational environment without considering the inherent linkages and differences

between them will provide a false picture of climate and will perpetuate the existing confusion.

It is generally agreed that climate is closely tied to organizational, subsystem, and work environment attributes (22). This emphasis is evident whether the research focus is on the actual events, processes, and demands of the work environment (hereafter referred to as situational climate) or is instead on individual perceptions and interpretations of those attributes (psychological climate). It is further evident that the climate concept is used to represent more than simple listings of attributes or perceptions. Rather, climate contains the additional element of behavioral salience. For example, the concept of situational climate has generally been used to refer to the demand character of the work environment in terms of directional influences on the behaviors of organizational or subunit members (15, 17, 18, 23, 35). This description refers to the social and symbolic meaning attached to the situation as much as the attributes themselves. In this regard, relationships between such relatively specific attributes as unstructured, poorly specified role prescriptions, unclear reward contingencies, and non-directive, inconsistent leadership patterns might be characterized as a conflicting and ambiguous climate.

We further see this idea of social meaning in our models of human behavior which generally assume that situational events and, thus, situational climates influence behavior primarily because the individual perceives these events and attaches behavioral implications to them (15, 19, 23). We assume that a variety of reality-testing mechanisms will lead to

similar perceptions among persons who experience similar situations. This latter idea, combined with the belief that members of the same organizational unit will have similar experiences, has formed the cornerstone for much of the existing climate research, for it has been the primary justification for using individual perceptions to draw inferences about organizational and subsystem climates (23). For these reasons, the basic utility of the situational climate concept rests heavily on the belief that similar climates will produce similar perceptions and predictable if not similar behaviors. On the other hand, that belief must, in turn, rest on a firm understanding of how individuals perceive the environment, attach structure and meaning to those perceptions, and use that meaning to develop behavioral guidelines and intentions.

An individual's perceptions of an organization reflect at least two related elements: a) opportunities to observe or experience particular aspects of the work environment, and b) individual characteristics, filters, and values that influence the perceptual process. In regard to opportunities to observe events or attributes, it might be said that the influences of organizational, subsystem, leader, workgroup, and task characteristics are represented by the broad concept of situational climate but culminate in the individual's role. It is the specific role or position in the organization that largely defines what a person's experiences will be, how the person will be treated by others, what demands or expectations must be met, even the latitude of behavior that may exist.

Unfortunately for the climate researcher, individuals are not randomly assigned to positions but tend to be systematically placed in particular

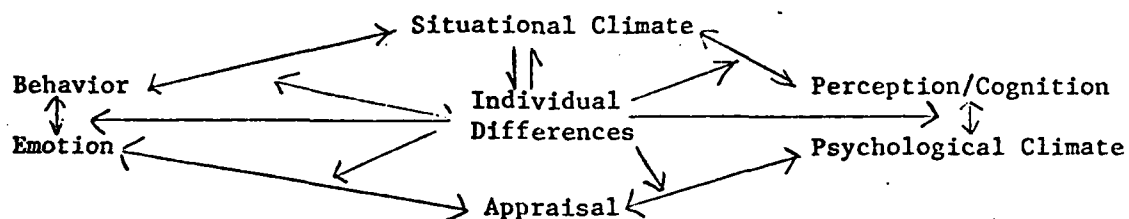
roles. Before most roles are entered, considerable negotiation between the potential incumbent and the organization is likely. The organization may select role incumbents on the basis of particular experience, training, ability, and skill requirements, but individuals must seek the position, acquire the needed experience, training, and skills, and perform at the levels required to retain the position. Even after the position is filled, each role incumbent differs in how the situation is perceived, what meaning is attached to perceived events, even how the demands of the role are renegotiated. Thus, the incumbent plays an active part in the final determination of that role.

It is in this regard, the influences of individual characteristics and filters, that the non-random assignment of individuals to work environments most plagues climate research. While it appears conceptually defensible, even desirable, to use situational climate to describe behavioral influences common to all members of a particular organizational unit, a variety of individual attributes including intelligence, personal theories of behavior, subjective values and norms, cognitive ability, and previous experience are likely to lead to individual variations in how those influences are perceived and interpreted (4, 30). In other words, perception involves a variety of processes that tend to produce differences between the behavioral influences referred to as situational climate and the individual interpretations of meaning and projections of behavioral outcomes referred to as psychological climate. Because particular kinds of individuals are often systematically assigned to particular positions and units, perceptual data may provide a distorted perspective of the actual situation.

Many of the foregoing points are clearer if considered from the perspective of a specific model of behavior. For example, Locke (28) postulated that situational events were linked to job satisfaction as follows:

object (situation)----> perception (cognition)----> appraisal (value judgement)----> emotion (affect).

If this model were expanded to include behavior, feedback loops, and reciprocal causation, and were adapted to represent the probable linkages between situational climate and psychological climate, a simplified version would probably look more like the following:



This latter model attempts to represent: (a) the mutual selection of persons and environments, (b) the influences of individual characteristics on what is perceived, how perceptions are organized, what criteria and values are used in appraisal, the nature of the subsequent emotional response, and the behaviors attempted within a situation, and (c) the reciprocal relationships between individual behavior and the situation. Finally, the model attempts to represent the fact that individual and personal characteristics are relatively stable but may change because of experience, socialization, training, and so forth (25).

In sum, an awareness of the processes whereby individuals perceive and interpret characteristics of the work environment invites a conceptual distinction between climate viewed as a situational attribute of organizations (or organizational subsystems) versus climate as an intra-individual, perceptual attribute. On the other hand, the inherent interdependence of these two domains suggests that a focus on either concept should take place only within the context of a model that addresses both.

METHODOLOGICAL CONCERNS

In spite of the extensive effort to understand and articulate conceptual relationships and distinctions between situational and psychological climate, both concepts are generally measured the same way. Perceptually-based, paper and pencil measures are used at an individual level to infer psychological climate and at an aggregate level to infer situational climate. While this practice appears justifiable on a variety of grounds (e.g., it is cheap and convenient; aggregated perceptions presumably reflect situational similarities; several established measures already exist; neither psychological climate nor situational climate can be measured directly but must be inferred from relationships among other observable data), the use of aggregated individual data to describe organizations or their subsystems presents a number of methodological problems.

A primary problem lies in the fact that individual, perceptual scores contain sources of variance that are not present when these scores are aggregated across individuals. Because some of the sources of variance reflect situational differences in experience, role differences, differences in level, or other positional differences), aggregation may obscure important

information about the work environment and present a falsely homogeneous picture of the climate for the group. Other sources of variance lie in the individual characteristics and filters mentioned earlier. While a strict emphasis on descriptive responses would tend to limit such bias (33), one cannot arbitrarily dismiss the possibility of biased or inaccurate perceptions that would present a false picture of the actual situation. Further, as discussed earlier, aggregation across disparate individual scores may result in inappropriate conclusions due to a methodological artifact (i.e., ecological fallacy).

For such reasons, researchers interested in the concepts of situational and psychological climate have been forced to address empirically the issue of perceptual representativeness. This term refers to the degree to which individual perceptions and scores based on individual perceptions actually describe situations. Insofar as such efforts have concentrated almost exclusively on the use of average or mean scores as the form of aggregation, that will be the principal form addressed below.

As noted earlier, many researchers have defined situational climate in terms of inter-group differences in individual perceptions and have measured these differences in terms of significant main effects within an ANOVA paradigm. The more rigorous researchers have also computed indices of statistical power such as ω^2 or η^2 . Interpretation of such indices has rested largely on the assumption that significant differences between organizations or subgroups indicate that the perceptual scores primarily reflect situational rather than individual factors. Thus, greater between-group

differences imply higher levels of agreement, whereas greater within-group variance implies a corresponding lack of agreement.

Although this approach appears logical, specific guidelines to determine appropriate levels of statistically implied agreement are not generally available. While numerous studies of work-related perceptions have demonstrated between-group differences that are statistically different from zero (8, 10, 37, 39, 40), the corresponding indices of statistical power have fallen well below the level of 1.0 advocated by Guion (11) and have led researchers to seek other measures of agreement.

An alternative strategy which calculates the reliability of the aggregated score has also been less than satisfactory. Various studies have computed a Spearman-Brown conversion of power indices in order to estimate the reliability of the mean score (9) and have reported values varying between .70 and .91. Unfortunately, large sample sizes yield high estimates of mean score reliability even when the means are based on heterogeneous individual scores. For example, a recent study by Jones and James (23) used intraclass correlation coefficients as indices of agreement among U.S. Navy sailors and found but minimal levels of agreement for departments and ships. The median intraclass correlation for department level analyses was .06, while .02 was the corresponding indication of shipwide agreement. Spearman-Brown estimates of mean score reliability produced median values of .71 for these levels of aggregation. Such findings demonstrated that relatively low levels of agreement (high within-group variation in scores) can still yield highly reproducible and reliable means when the sample is large. Thus, indices of mean-score reliability

tend to provide an overly optimistic portrayal of perceptual agreement.

Attempts to define situational climate on the basis of between-group perceptual differences suffer from still other methodological pitfalls. If large numbers of people are involved (as might be the case in studies of climate in major organizations), a comparison of very similar situations could produce indications of main effects that were statistically significant but essentially meaningless. Because little individual score variation is accounted for by membership in a particular group, members of different groups might be expected to show few differences in behavior. Similarly, comparisons between small workgroups require rather large numerical differences before a statistical indication of different climates is present. Thus, indices based solely on the idea of between-group differences may provide inadequate estimates of the representativeness of perception.

The limitations faced by the common indices of perceptual agreement call for attention to other measures that better indicate the degree to which aggregated scores represent shared situational attributes. One such measure might be the demonstration of similar exposure to externally assessed situational factors, such as context (e.g., technology, goals, etc.) and structure (e.g., size, centralization of decision making, span of control, etc.). Because many organizations consist of a number of relatively heterogeneous subgroups that differ substantially on goals, technology, subgroup size, and so forth (20, 27, 29, 35, 41), an empirical demonstration of similar scores on such measures would tend to justify aggregation, whereas diverse context or structure would argue against aggregation.

The above contention is further supported by findings that work environment perceptions differ significantly across different roles and organizational positions (2, 15, 22, 24, 34, 40, 43). Newman (31) concluded that positional differences were more important than personal characteristics in determining individual perceptions of the organizational situation. A recent study by Jones and James (23) on U.S. Navy ships found a greater similarity in the aggregated perceptions of similar divisions from different ships than for dissimilar divisions on the same ship. In other words, subsystem climate appeared more related to task and function similarities than to common organizational membership. A more recent study on bank employees (14) led to parallel conclusions when it noted that factors in the workgroup environment contributed to greater or lesser agreement within different workgroups. Thus, aggregation of psychological climate scores appears justifiable for relatively homogeneous organizational units but such justification decreases when the roles are heterogeneous.

A final index of the appropriateness of using aggregated psychological climate scores as situational measures might be the empirical demonstration that such aggregated scores were meaningfully and predictably related to organizational or individual criteria. The use of aggregated perceptual data is enhanced to the extent that such scores help to predict and understand organizational or subunit functioning.

In sum, although there appears to be considerable theoretical and practical justification for the use of aggregated perceptual scores to study situational climate, such justification cannot be considered absolute or

uniformly applicable across all organizations, units, or subsystems.

Thus, there should be an empirical demonstration that aggregation to a particular subunit or organizational level is justified. While potential criteria which justify aggregation include (a) demonstrated perceptual differences across organizations or subunits, (b) interperceiver agreement, (c) homogeneous situational characteristics, and (d) meaningful relationships between the aggregated scores and various criterion measures, methodological limitations inherent in each procedure suggest that aggregation should rest on more than one index of justification and should be undertaken only if the level of aggregation is consistent with the theoretical question asked. Finally, the linear dependence of group scores on the underlying individual scores makes it difficult to carry out simultaneous investigations of the effects of situational and psychological climate. Thus, even if it can be demonstrated that averaged perceptual responses reflect situational conditions for members of a particular unit, a comprehensive exploration of climate requires the development of alternative forms of measurement.

CONCLUSIONS

In closing, it would do well for organizational researchers to heed an admonition recently offered for the study of small groups: "The well-ingrained orthodox conceptions of social system and the human psychological system are simply inadequate if they cannot handle the changes that actually occur at both sociological and psychological levels" (42, p. 380). Attempts to clarify concepts in the climate domain have little likelihood of success if they are no more than name changes or cosmetic redefinitions that obscure

but do not resolve underlying conceptual deficiencies. On the other hand, a reassignment of terms to reflect conceptual distinctions and to focus measurement on meaningful levels and attributes appears desirable. Finally, whatever value exists in articulating distinctions among the various levels of situational climate (e.g., organizational climate, subsystem climate, workgroup climate, or even role climate) or between situational and psychological climate will be lost if researchers ignore the conceptual factors that justify such distinctions and fail to incorporate these factors into future research designs and models of behavior.

A move in the desired direction requires a number of steps. While most have been stated or alluded to elsewhere, an overevident lack of attention more than justifies their restatement.

1. Major emphasis must be placed on developing theoretical models that simultaneously: (a) link organizational, subsystem, workgroup, and role characteristics to individual behavior; (b) attend to the role of individual characteristics in perceiving, structuring, and behaving toward environments; and (c) provide theoretical and methodological direction to research and action.
2. Names for climate and other variables in such models should be assigned so that they focus attention on appropriate theoretical attributes. That is, situational climate should be reserved for application to situations, subsystem climate for application to subsystems, psychological climate for application to intra-individual concepts, and so forth. Defining the universe and its constituent parts as subsystems of each other is hardly

a step in this direction.

3. Conceptual definitions should be appropriate to the concept, and should be consistent with the appropriate level of application. Situational concepts should be defined in situational terms and not in terms of the psychological outcomes they produce. Situation-to-perception ties are important, but do not justify the use of functional rather than conceptual definitions.

4. Methodological applications should be expanded to include (a) within-situation consistencies as well as between-situation differences; (b) predictive and dynamic research designs as well as concurrent and static designs; (c) analytic techniques that address multiple and reciprocal causality as well as single and unidirectional causal orientations; and (d) measurement and assessment techniques that are consistent with the theoretical questions being addressed.

While such recommendations appear logical, they are by no means easy to carry out. The frequency with which these and similar suggestions appear in the organizational, sociological, and psychological literature is ample testimony to that point. On the other hand, unless such systematic steps are taken, researchers and reviewers in the next decade will be forced to echo James and Jones' conclusion in 1974 (19) that climate appeared even more diffuse than it was a decade earlier.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Many recent climate articles have continued in the tradition of theoretical and methodological confusion noted by several reviewers. In the present article, examples of common problem areas are identified, relevant theoretical and methodological points are discussed, and specific recommendations are offered to overcome some of these problems.		

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